

UNDERWATER SECRETS UNCOVERED



AMELIA KUNHARDT photos/The Patriot Ledger

■ Page Valentine of Duxbury, chief scientist for the U.S. Geological Survey in Woods Hole, shows a printout of a map of the underwater world of Stellwagen Bank that he photographed.

MAPPING THE DEEP BLUE SEA



■ An underwater photo shows a portion of the sea bed under Stellwagen Bank off Massachusetts.

Scientists document ocean floor in Stellwagen Bank

By **DAN DeLEO**

The Patriot Ledger

FALMOUTH

For 11 years, Page Valentine has been trying to find out the lay of the land on the ocean floor.

The chief scientist for the U.S. Geological Survey in Woods Hole has just completed mapping the underwater world of Stellwagen Bank — the body of water that stretches from Cape Cod to Cape Ann — and now he is naming more than two dozen geological features of the seabed.

The first sea-floor topography map on the East Coast is expected to be an important tool in protecting the ecologically significant ocean resource.

"One of the problems in managing the sea bed is without detailed maps, it's hard to know what's out there," Valentine said. "It's just like on land. If you want to go somewhere, you need a road map."

Valentine sought out local fishermen and lore to come up with many of the names.

He picked Thatcher Basin in honor of Antony

Please see **MAP** — Page 2

Scientists map topography of Stellwagen's ocean floor

■ MAP

Continued from Page 1

Thacher, who was shipwrecked on a nearby island in 1635. Rose and Lucy's Basin has a local connection: it is the name of a fishing vessel out of Gloucester whose crew relied on Stellwagen Bank for big catches for decades.

Stellwagen Bank is the centerpiece of the Stellwagen Bank National Marine Sanctuary, which encompasses about 865 square miles of water, including all of Massachusetts Bay.

Valentine and his team embarked on the ambitious mapping project in 1994. The project, a joint effort between the U.S. Geological Survey and the National Oceanic and Atmospheric Administration, is in its final phase. Canadian researchers, who have pioneered underwater topography mapping, also contributed.

Using a Canadian research vessel, the *Creed*, Valentine and his crew made hundreds of passes over Stellwagen Bank and beyond during the spring and fall, when water conditions and temperatures

were ideal.

The *Creed* is equipped with high-tech sonar equipment, which sent up to 120 sound beams down to the ocean floor and back. Depending on the time and strength of the return signal, Valentine and his team were able to determine the makeup of the ocean floor — sand, silt, ledge — water depth and geological features, such as a bank or channel.

Underwater video and still photography gave them a better idea of what lay below the ocean's surface.

They found more than 50 shipwrecks, Valentine said.

They were also able to study the ever-changing ocean floor, and the effects of nor'easters on the underwater landscape.

"You need to know how the seabed evolves if you want to understand them," he said. "If you don't understand how these features are changing, you can't understand the entire ecological system out there."

The new understanding of the sea bottom, long a mystery to fishermen and scientists, could be used in myriad ways,

Valentine said.

A utility company used some of the data about five years ago to plot a suitable pipeline for a fiber-optic line. Valentine's crew also mapped a disposal site on the edge of the Stellwagen Bank. The site is used to deposit dredgings from Boston Harbor. It is regulated by the U.S. Environmental Protection Agency and the Army Corps of Engineers. Now they will be able to monitor the site more efficiently and take samples easily, he said.

"They won't be doing anything blind."

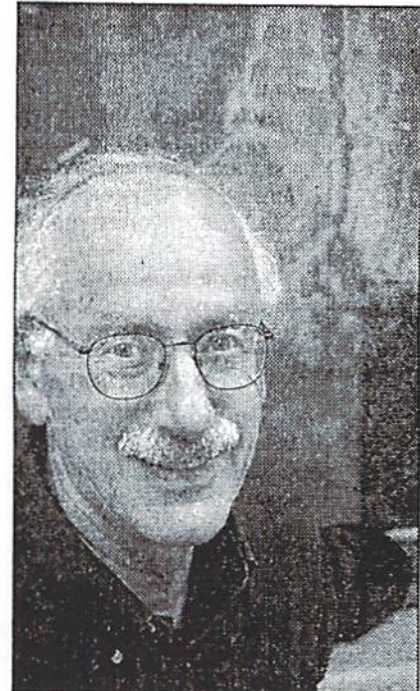
Valentine's names have been approved by the U.S. Board on Geographic Names, a federal agency.

The next phase of the project will involve creating a series of interpretive maps of the entire Stellwagen Bank. Those maps will build off the data obtained during the mapping project to give a full picture of the state of Stellwagen Bank.

"We hope to pull it all together,"

Valentine said.

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AMELIA KUNHARDT/The Patriot Ledger

Page Valentine has just completed a project mapping and naming the underwater world of the Stellwagen Bank.